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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/520,259	09/12/2005	Anthony Thomas Harcombe	DP-308435	2953

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EXAMINER	
MCGRAW, TREVOR EDWIN	
ART UNIT	**PAPER NUMBER**
3752	
MAIL DATE	**DELIVERY MODE**
12/05/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/520,259	HARCOMBE ET AL.	
	Examiner	Art Unit	
	Trevor E. McGraw	3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 November 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5,8,10-17 and 19* is/are pending in the application.

4a) Of the above claim(s) *8,11 and 13-16* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,3,5,10,12,17 and 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 11/12/2008 has been entered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 6, 10 and 12, are rejected under 35 U.S.C. 102(b) as being anticipated by Pataki et al (US 5,396,926).

In regard to Claims 1-3, Pataki et al. (5,396,926) teach a control valve arrangement for use in controlling fuel pressure within a control chamber of a fuel injector thereby to control the movement of an injector valve needle relative to an

injector valve seating wherein, in use, a portion of the injector valve needle is exposed to fuel pressure within the control chamber, the control valve arrangement has a control valve member (12), that is movable between a first position and a second position, wherein the first position, the control valve member engages a first seating (44) such that the control chamber (40) communicates with a source of high pressure fuel (8) and communication between the control chamber and a low pressure fuel drain is prevented thereby urging the injector valve needle against the injector valve needle seating, and wherein in the second position the control valve member engages a second seating (38) such that the control chamber (41) communicates with the low pressure fuel drain (10) and communication between the control chamber (41) and the source of high pressure fuel (8) is broken thereby causing the injector valve needle to life away from the injector valve needle seating, wherein the second seating (38) is defined by a surface of a bore provided in a valve housing that the control valve member (12) is movable. A restricted flow path (pathway from “42” to “10”) restricts the rate of flow of fuel from the control chamber (41) to the low pressure fuel drain (10) when the control valve member (12) is moved from the first position to the second position, thereby reducing the speed at which the injector valve needle lifts from the injector valve needle seating and restricting the rate of fuel flow from the source of high pressure fuel to the low pressure fuel drain when the control valve member is moved from the second position to the first position to urge the injector valve needle against the injector valve needle seating while reducing the loss of high pressure fuel to low pressure, where the restricted flow path (pathway from “42” to “10”) has a restricted flow passage (42) located between the first seating

(44) and the second seating (38) and defined by an outer surface of the control valve member and the bore in the valve housing.

The restricted flow path is operable for restricting the rate of fuel flow from the high pressure fuel source (8) to the low pressure drain (10) when the control valve member (12) is moved between the second position and the first position to reduce the loss of high pressure fuel to low pressure.

The restricted flow path is also arranged so fuel flow rate out of the control chamber to the low pressure drain is relatively low whereas the fuel flow rate into the control chamber is relatively high (see "6" and "8"; high pressure fuel input) and provides asymmetric control valve operation.

In regard to Claims 5 and 6, the control valve member of Pataki et al is movable within the bore provided in the valve housing where an insert (16) is arranged within the bore in the valve housing to define the first seating (44) and the second seating (38) is defined by a surface of the bore provided within the valve housing.

Regarding Claims 10 and 12, Pataki et al further teach where the restricted flow path (pathway from “42” to “10”) is arranged upstream of the first seating (44) and downstream of the second seating (38) where the restricted flow path (pathway from "42" to "10”) is defined by an orifice provided in the control valve member (see orifice opening of “42” within control valve member “12” in Figure 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 17 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pataki et al. (US 5,396,926) in view of Harcombe (US 6,889,918).

In regard to Claims 17 and 19, Pataki et al as taught and described above, is silent on having a control valve arrangement being used in conjunction with a fuel injector for use in delivering fuel to an internal combustion engine where the fuel injector has a valve needle that engages with a valve needle seat to control fuel delivery through an outlet opening, and a surface associated with the valve needle is exposed to fuel pressure within a control chamber and a control valve arrangement for controlling fuel pressure within the control chamber. However, Harcombe teaches where a control valve arrangement is used with a fuel injector for use in delivering fuel to an internal combustion engine where the fuel injector has a valve needle that engages with a valve needle seat to control fuel delivery through an outlet opening and a surface associated with the valve needle is exposed to fuel pressure within the control chamber. It would have been obvious to one having ordinary skill in the art at the time the present invention was made to afford the control valve arrangement of Pataki et al with the fuel injector of Harcombe in order to provide for improved precision of controlled fuel delivery to a internal combustion chamber.

Response to Arguments

Rejection under 35 USC § 102

Applicant's arguments filed 10/01/2008 have been fully considered but they are not persuasive. Examiner cannot agree with Applicant's contention that the fuel control valve of Pataki et al does not control valve arrangement for use in controlling fuel pressure within a control chamber. Examiner brings to Applicant's attention that in columns 5-7 Pataki et al clearly and overtly show that the control valve member does in fact have a restricted flow path for restricting the rate that enters or flows to a low pressure fuel drain when the control valve moves between a first and second position and where the flow path is between (location) the first and second seat positions. Applicant is directed to reference numerals "8", "10" as well as column 8, line 48 thru column 9, line 50 with emphasis on lines 9-13 of Column 9 for how "8" can be a high pressure fuel supply to a fuel injector. Examiner has provided Applicant with a concise depiction of the limitations for which Pataki et al reads upon in the Office Action mailed 11/28/2007. For the aforementioned reasons and the lack of claim amendments that overcome the prior art of record, Examiner is maintaining the rejection of Claims 1-3, 5, 6, 10, 12, 17 and 19 held under 35 USC § 102 (b).

Rejection under 35 USC § 103

Applicant's arguments filed 10/01/2008 have been fully considered but they are not persuasive. Examiner contends that the deficiencies of Pataki et al are accounted

for with Harcombe and that the combined references teach the limitations of Claims 17 and 19, one having ordinary skill in the art would expect a reasonable success through the combination and it being obvious to afford the control valve arrangement of Pataki et al with the fuel injector of Harcombe to provide for improved precision of controlled fuel delivery to a internal combustion engine. Thus, Examiner is maintaining the rejection of Claims 1-3, 5, 6, 10, 12, 17 and 19 held under 35 USC § 103 (a).

Double Patenting Rejection

Applicant's arguments filed 03/03/2008 have been fully considered but they are not persuasive. Applicant has not overcome the rejection by amending the independent claims and has not filed a terminal disclaimer to disclaim the patent term of the present invention. As a result, Examiner maintains the nonstatuatory obviousness type double patenting rejection over Claims 1-10 of US 6,889,918 in view of US 5,396,926.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cooke (US 5,660,331), Ueda (US 5,524,825).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Trevor McGraw whose telephone number is (571) 272-7375. The examiner can normally be reached on Monday-Friday (2nd & 4th Friday Off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571) 272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/T. E. M./
Examiner, Art Unit 3752
/Len Tran/
Supervisory Patent Examiner, Art Unit 3752